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J. Todd Johnson

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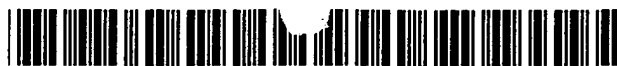
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US005928671A

United States Patent [19]**Domenico**[11] **Patent Number:** **5,928,671**[45] **Date of Patent:** ***Jul. 27, 1999****[54] METHOD AND COMPOSITION FOR INHIBITING BACTERIA**[75] **Inventor:** **Philip Domenico, Elmhurst, N.Y.**[73] **Assignee:** **Winthrop University Hospital, Mineola, N.Y.**

[*] **Notice:** This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

[21] **Appl. No.:** **08/883,584**[22] **Filed:** **Jun. 26, 1997****Related U.S. Application Data**

[63] Continuation of application No. 08/428,464, Apr. 25, 1995, abandoned.

[51] **Int. Cl.⁶** **A61K 31/095; A61K 33/24**[52] **U.S. Cl.** **424/653; 514/706**[58] **Field of Search** **424/653; 514/706****[56] References Cited****U.S. PATENT DOCUMENTS**

- 2,809,971 10/1957 Bernstein et al. 260/270
- 3,583,999 6/1971 Damico 260/294.8
- 3,753,990 8/1973 Curry 260/270
- 3,773,770 11/1973 Damico 260/290
- 3,833,565 9/1974 Curry 260/270
- 3,852,441 12/1974 Kooistra, Jr. 424/245
- 3,890,242 6/1975 Curry 252/107
- 4,374,825 2/1983 Bolich, Jr. et al. 424/70
- 4,524,110 6/1985 Heeres et al. 428/537.1
- 4,963,344 10/1990 Gries et al. 424/9
- 5,104,645 4/1992 Cardin et al. 424/70
- 5,541,233 7/1996 Roenigk 521/54
- 5,593,670 1/1997 Trinh et al. 424/76.1
- 5,596,102 1/1997 Austin 548/101
- 5,605,681 2/1997 Trandai et al. 424/65
- 5,624,666 4/1997 Coffindaffer et al. 424/70.21
- 5,643,971 7/1997 Roenigk 523/122

FOREIGN PATENT DOCUMENTS

- 9412034 6/1994 WIPO .

OTHER PUBLICATIONS

- W. Beil et al., *Pharmacology* 50:333-337 (1995).
- D.W. Bierer, *Rev. Infect. Dis.* 12(1):S3-S8 (1990).
- D. Chaleil et al., *J. Inorg. Biochem.* 15:213-221 (1981).
- N.A. Cornick et al., *Rev. Infect. Dis.* 12(1):S9-S10 (1990).
- J.S. Dixon, *Scand. J. Gastroenterol.* 30(212):48-62 (1995).
- P. Domenico et al., *J. Antimicro. Chemo.* 28:801-810 (1991).

- P. Domenico et al., *Infection* 20(2):18/66-23/71 (1992).
- P. Domenico et al., *Eur. J. Clin. Microbiol. Infec. Dis.* 11:170-175 (1992).

- P. Domenico, "Comparative Antibacterial Properties of Bismuth-Dimercaprol and Chlorhexidine," 95th Gen'l. Meeting Amer. Soc. Microbiol., Washington, D.C. (May 1995).

- P. Domenico et al., "Bismuth-Dimercaprol Activity Against Multiply Resistant Gram-Positive Bacteria," *Clin. Res. Meeting, Abstract* (May 1995).

- P. Domenico et al., *In vitro* Antifungal Activities of BisBAL and BisME, Two Thiol-Chelated Bismuth Compounds, 36th ICAAC, Abstract F188 (Sep. 1996).

- P. Domenico et al., "Efficacy/Toxicity of Bismuth-Dimercaprol in a Burn Wound Sepsis Model," 96th ASM General Meeting, Abstract A10 (May 1996).

- P. Domenico et al., "Antimicrobial Activity of the Bismuth-Thiol Chelates, BisBAL and BisME," *Clin. Res.* 44:332A, Abstract (1996).

- P. Domenico et al., *Annals of N.Y. Acad. Sci.* 797:269-270 (1996).

- P. Domenico et al., *Antimicrob. Agents and Chemo.* 38(6):1031-1040 (1997).

- P. Domenico et al., *Antimicrob. Agents and Chemo.* 41(8):1697-1703 (1997).

- P. Domenico et al., "Potentiation of Bismuth Antibacterial Activity by Thiol Chelators," 97th ASM Gen'l. Meeting, Florida, Official Abstract Form & Abstract A-43 (May 1997).

- B.E. Douglas et al., *Concepts and Models of Inorganic Chem.*, 3rd Ed. pp. 463-465 (1994).

- H.L. DuPont et al., *New Eng. J. Med.* 328:1821-1827 (1993).

- D. Figueroa-Quintanilla et al., *New Eng. J. Med.* 328(23):1653-1658 (1993).

- S.L. Gorbach et al., *Reviews of Infect. Dis.* 12(1):S21-S23 (1990).

- Gould et al., "Activity of the Novel Compounds BisBAL and BisME Against *Burkholderia cepacia*," 36th ICAAC, Louisiana, Abstract F246 (1996).

(List continued on next page.)

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A composition comprising a trivalent bismuth salt, particularly bismuth nitrate, and dimercaprol is described. Methods for using the composition as a bacteriocidal and bacteriostatic agent and as a disinfectant and preservative are also provided.

18 Claims, 1 Drawing Sheet